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2-1 Introduction

All project designs that include clearing and grubbing, embankment work, or other earth work will include a Temporary Erosion and Sediment Control (TESC) Plan. The TESC will show which Best Management Practices (BMPs) will be used to meet Minimum Requirement 1.

Additionally, all state projects adding at least 5,000 square feet (465 square meters) of impervious surface will comply with Minimum Requirements 2 through 9. The designers will apply BMPs to the maximum extent practicable for each project. In the case where it is not practicable to fully implement the required BMPs, the procedure explained in Minimum Requirement 9 and Chapter 5 shall be followed to show what mitigation has been done and why further mitigation is not practicable for the project.

2-2 Minimum Requirement 1 — Erosion and Sediment Control

Projects will be designed and managed to prevent erosion and sediment from leaving the site. The designers will design the project to protect adjacent properties from sediment deposition and increased flows. Any temporary conveyance systems will be designed to handle flow from the 2-year design storm for the developed conditions. The configuration of the project stormwater management design and the temporary BMPs used during construction will be shown on the Stormwater Site Plan (SSP) (Minimum Requirement 9).

2-3 Minimum Requirement 2 — Preservation of the Natural Drainage System

Natural drainage patterns shall be maintained, and discharges from the site shall occur at the natural locations.

2-4 Minimum Requirement 3 — Source Control of Pollutants

The project will be designed to prevent stormwater from coming in contact with pollutants. This shall include, but not be limited to:

- Minimize natural vegetation removal.
- Vegetation restoration after construction.
- Maintain vegetative buffers around water bodies.
- Proper storage and handling of potential pollutants.
- Establishing vegetation management plans.
- Street sweeping on a regular basis.

While source control is the preferred method of eliminating pollutants, there are few opportunities to practice source control on typical highway projects. The exception being during the construction phase of all projects and for the permanent phase of park and ride, regional offices, area maintenance offices, storage facilities, and and rest area projects. Chapter 4 provides a more detailed description of sources control BMPs.

2-5 Minimum Requirement 4 — Water Quality Treatment

All projects shall provide water quality treatment of stormwater runoff from the newly created impervious surface. The practicality of providing water quality treatment for runoff from any existing impervious area shall be investigated. The associated costs for treating new and existing impervious areas shall be recorded in the project's Hydraulics Report. BMPs for existing impervious runoff will be implemented whenever the investigation demonstrates that it would more feasible to construct the BMPs during the current project instead of waiting until a future date to fully retrofit the entire roadway section. BMPs for existing impervious runoff will also be installed whenever the benefit derived from immediately retrofitting the roadway can be shown to outweigh the cost of installing the BMPs. The treatment is to be designed to reduce pollutant loads and concentrations in stormwater using physical, biological, and chemical removal mechanisms. Water quality treatment BMPs will be designed to treat the 6-month 24-hour design storm. The volume of the 6-month design storm is equal to 64 percent of the volume of the 2-year design storm.

2-6 Minimum Requirement 5 — Water Quantity Treatment

All projects that do not meet one of the exemptions listed below shall provide water quantity treatment of stormwater runoff from the newly created impervious surface. The practicality of providing water quantity treatment for runoff from any existing impervious area shall be investigated. The associated costs for treating new and existing impervious areas shall be recorded in the project's Hydraulics Report. BMPs for existing impervious runoff will be implemented whenever the investigation demonstrates that it would be more feasible to construct the BMPs during the current project instead of waiting until a future date to fully retrofit the entire roadway section. BMPs for existing impervious runoff will also be installed whenever the benefit derived from immediately retrofitting the roadway can be shown to outweigh the cost of installing the BMPs.

Infiltration is the preferred method of reducing the quantity of stormwater runoff. If infiltration cannot be used at the project site, then the peak rate of runoff from the treated area after project completion shall be no greater during the 2-year design storm than 50 percent of the existing conditions 2-year peak runoff. The peak rate of runoff after project completion shall be no greater during the 10-year and 100-year design storms than the existing condition 10-year peak runoff and 100-year peak runoff respectively.

Projects do not have to include water quantity treatment if any one of the following apply:

- The discharge is directly to a body of salt water.
- The discharge is directly to one of the major rivers listed in Figure 2-6.1.
- The discharge is directly to a lake with a surface area greater than 300 acres.

There are other situations when providing no water quantity treatment for a project may be preferable. For instance, if the project is located in a rural basin and an analysis shows that sheet flow from the roadway will fully infiltrate prior to reaching the nearest receiving water body, then it may be beneficial to allow this to occur instead of collecting the runoff and discharging it as surface flow to the

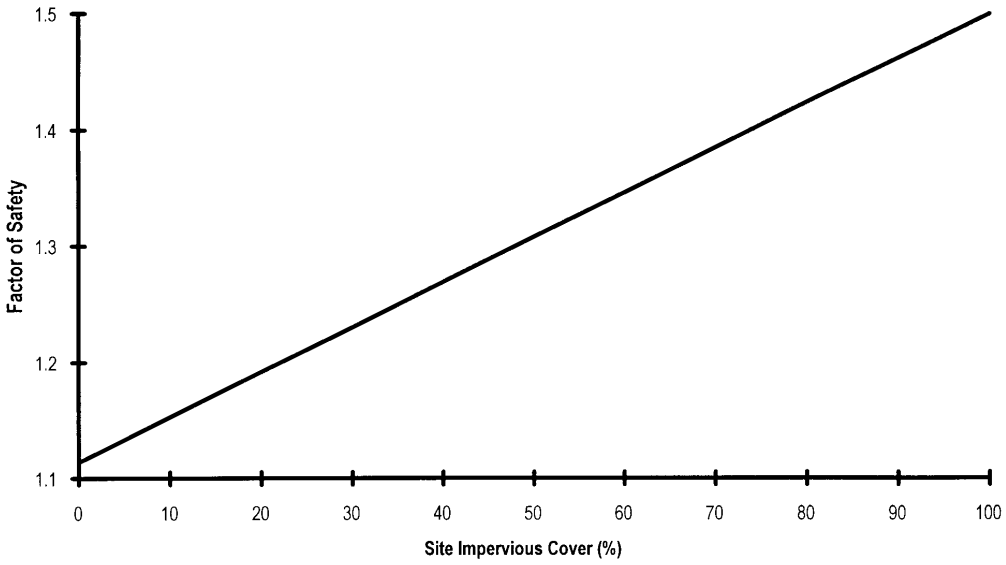
receiving body. Anytime the designer believes that water quantity treatment should not be included but the project does not meet one of the three exemptions listed in the previous paragraph, he/she must contact the Hydraulics Section as early in the project as possible. The Hydraulics Section will aid the designer in properly analyzing the effects of the project's runoff. The Hydraulics and Environmental Sections will also coordinate with the appropriate state, local, and federal agencies to ensure adequate protection of all natural resources.

Whenever the project utilizes a detention BMP (RD.11 Dry Pond or RD.20 Dry Vault/Tank) a factor of safety must be applied to the BMP volume. The factor of safety is dependent on the percentage of total area that is impervious which is contributing flow to the BMP. The factor of safety is obtained from Figure 2-6.2. The factor of safety will be applied by first designing the BMP using the Santa Barbara Urban Hydrograph Method (see Chapter 3) and then multiplying the initial design volume by the factor of safety to obtain the final volume. The BMP's volume must be increased from the initial design volume to the final volume without increasing the average depth.

River	Upstream Point for Exemption
Bogachiel	Bear Creek
Calawah	Sitkum River
Chehalis	Bunker Creek
Columbia	Canada Border
Cowlitz	Skate Creek
Elwha	Lake Mills
Grande Ronde	Oregon Border
Hoh	South Fork Hoh River
Humptulips	West & East Fork Confluence
Kettle	Canada Border
Klickitat	Little Klickitat River
Lewis	Swift Reservoir
Methow	Lost River
Naches	Nile Creek
Nisqually	Alder Lake
Nooksack	Glacier Creek
South Fork Nooksack	Hutchinson Creek
Okanogan	Osoyoos Lake
Palouse	Idaho Border
Pend Oreille	Idaho Border
Puyallup	Carbon River
Queets	Clearwater River
Quillayute	Bogachiel River
Sauk	Clear Creek
Satsop	Middle & East Fork Confluence
Skagit	Cascade River
Skokomish	Vance Creek
Skykomish	Beckler River
Snake	Idaho/Oregon Border
Snohomish	Snoqualmie River
Snoqualmie	Middle & North Fork Confluence
Sol Duc	Beaver Creek
Spokane	Idaho Border
Stillaguamish	North & South Fork Confluence
North Fork Stillaguamish	Boulder River
South Fork Stillaguamish	Canyon Creek
Toutle	North & South Fork Confluence
North Fork Toutle	Green River
White	Greenwater River
White Salmon	Trout Lake Creek
Wynoochee	Wishkah River Road Bridge
Yakima	Keechelus Lake

Rivers Exempted From Minimum Requirement 5

Figure 2-6.1



Factor of Safety for Detention Ponds and Vaults

Figure 2-6.2

2-7 Minimum Requirement 6 — Wetlands

Stormwater runoff discharging to a wetland must be treated for water quality and quantity in a manner consistent with that described in Minimum Requirement 4 and 5. Stormwater treatment facilities should not be placed in the designated buffer for a wetland.

Wetlands are more sensitive to varying site specific and regional conditions. Thus every wetland must be evaluated on a case-by-case basis to determine impacts of stormwater discharges. The diversity in the values and functions of a wetland, as well as the uniqueness of the type of wetland, will need to be understood before determining if the treatment provided by Minimum Requirements 4 and 5 will adequately protect the receiving wetland. In addition, the management strategy for wetlands on a watershed basis will influence available stormwater control options. The best source of information regarding wetlands is the service center Biology Unit. Preliminary guidelines are provided in Section 5-2.10.

If a wetland is created to replace wetlands that were unavoidably destroyed during design and construction of a project, that wetland can not be used for stormwater treatment. Constructed wetlands can be designed to treat stormwater runoff. A constructed wetland must be in an area that was not a wetland and be designed specifically for the purpose of treating stormwater. The designers should see the Hydraulics Section for guidance if they want to use a Constructed Wetland BMP.

2-8 Minimum Requirement 7 — Downstream Analysis

An analysis shall be performed to determine the potential impacts from the project on the downstream system. At a minimum, the downstream analysis will include the area from the project site to a point one quarter of a mile downstream of the

project site. The analysis must proceed far enough along the drainage course to determine that nothing downstream of the end point will be affected by the project's runoff. Chapter 5 contains a detailed description of how to perform a downstream analysis. The results of the analysis will be included in the Stormwater Site Plan.

2-9 Minimum Requirement 8 — Sensitive Areas and Basin Plans

There are some drainage basins throughout the state where local agencies (in particular, those with a stormwater utility) have performed detailed analyses of the basin's hydrologic characteristics. These basins have typically been studied because they are known to be sensitive areas and often require the stormwater runoff to be treated in a special manner. Along with studying the hydrologic characteristics, the local agency will publish a document that describes the method to be used for stormwater treatment in the specific drainage basin. These documents are referred to as basin plans.

When a project or a portion of a project is located within a basin that has an adopted basin plan with recommended design standards, the methodology found in the basin plan shall be used. There are two exceptions to using the methodology in the basin plan. The first exception occurs if the requirements of the basin plan are less stringent than the requirements of this manual, in which case the requirements of this manual shall be used. The other exception occurs when the designer can show that by applying the requirements of this manual, the receiving body is adequately protected.

2-10 Minimum Requirement 9 — Stormwater Site Plan

For each project subject to any of these requirements, the designers will develop an SSP. This will include the hydraulic report, the TESC Plan, the BMP Selection Form (found in Chapter 4), the project specific maintenance schedule and any other information that shows the design and implementation of the stormwater treatment measures. Chapter 5 of this manual gives a detailed description of the material that should be included in the SSP.

If the minimum requirements for a project have not been met because the designer has determined that it is not practicable to include the necessary BMPs, then an explanation must be provided in the SSP. The explanation shall include the reasons why the minimum requirements have not been met for the site and the amount of stormwater treatment that can be provided. The explanation will be used by the the Hydraulics and Environmental Sections and any agencies that will be issuing permits for the project to accept or reject the request to allow the project not to meet the minimum requirements.

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